

WHAT IS CLAIMED IS:

1. An apparatus for irradiation of a fluid with UV light comprising:
a tubular body formed of a material which is UV-permeable, said tubular body including an inner surface defining a fluid chamber, and an open first end and an open second end for ingress and egress of the fluid through said fluid chamber;
a radiation source for producing UV light so arranged relative to said tubular body to subject said fluid chamber to the UV light;
an active cooling feature for cooling the radiation source; and
a reflector arranged relative to said radiation source to direct light emitted from said radiation source toward said fluid chamber.
2. The apparatus of Claim 1 wherein said tubular body is oriented vertically.
3. The apparatus of Claim 1 wherein said radiation source is a pair of parallel UV lamps.
4. The apparatus of Claim 3 wherein said pair of parallel UV lamps are positioned on opposite sides of said tubular body.
5. The apparatus of Claim 1 wherein said active cooling feature includes a heat sink, said heat sink being positioned in operative contact with said radiation source.
6. The apparatus of Claim 5 wherein said active cooling feature includes a fan, said fan being positioned so as to direct air onto said heat sink.
7. The apparatus of Claim 1 wherein said active cooling feature includes heat dissipating elements disposed on an outside of said reflector.
8. The apparatus of Claim 7 wherein said heat dissipating elements are oriented vertically.
9. An apparatus for irradiation of a fluid with UV light comprising:
a tubular body consisting of a material which is UV-permeable, said tubular body including an inner surface defining a fluid chamber, an open first end and an open second end for ingress and egress of the fluid through said fluid chamber; and

a radiation source having a first end and a second end opposite said first end, for producing UV light so arranged relative to said tubular body as to subject said fluid chamber to the UV light, wherein said first end includes a filament and said second end is actively cooled.

10. The apparatus of Claim 9 wherein said first end is oriented adjacent an upper end of said tubular body and said second end is oriented a lower end of said tubular body.

11. The apparatus of Claim 8 wherein said radiation source is a pair of UV lamps.

12. The apparatus of Claim 11 wherein each of said pair of UV lamps includes a respective heat sink positioned in contact with said second end.

13. The apparatus of Claim 12 further comprising one or more fan positioned so as to direct airflow onto said heat sink of each of said pair of UV lamps.

14. The apparatus of Claim 13 wherein a heat conductive material is provided between each respective said heat sink and said UV lamp.

15. The apparatus of Claim 9 further comprising a flow sensor to sense fluid flow through said apparatus and generate a signal based on the fluid flow, said signal being used to control said filament by dimming said radiation source during a period of low fluid flow through said apparatus and reduce heat generation thereby.